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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/586,115	06/02/2000	Rodolfo Milito	P3807	6216

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CENTRAL COAST PATENT AGENCY
PO BOX 187
AROMAS, CA 95004

EXAMINER	
HIRL, JOSEPH P	

ART UNIT	PAPER NUMBER
2121	

DATE MAILED: 03/24/2004

14

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/586,115	MILITO ET AL.	
	Examiner	Art Unit	
	Joseph P. Hirl	2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 January 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to an AMENDMENT entered January 15, 2004 for the patent application 09/586,115 filed on June 2, 2000.

2. All prior office actions related to patent application 09/586,115 is fully incorporated into this Final Office Action by reference.

3. The claims and only the claims form the metes and bounds of the invention. "Office personnel are to give the claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris,* 127 F.3d 1048, 1054-55, 44USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. *In re Prater*, 415 F.2d, 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969)" (MPEP p 2100-8, c 2, l 45-48; p 2100-9, c 1, l 1-4). The Examiner has full latitude to interpret each claim in the broadest reasonable sense. Examiner will reference prior art using terminology familiar to one of ordinary skill in the art. Such an approach is broad in concept and can be either explicit or implicit in meaning.

4. Examiner's Opinion:

Para 3 above applies. Examiner has full latitude to interpret each claim in the broadest reasonable sense.

Status of Claims

5. Claims 1-23 are pending.

Response to Arguments

6. Applicant's arguments filed on January 15, 2004 related to Claims 1-23 have been fully considered but are not persuasive.

In reference to Applicant's argument:

On page 3 of the instant Office Action, the Examiner kindly provides in the Response to Argument section, that the single issue at hand in the present case concerns whether or not Lakshman, concerning packet rule classification, "assigns a sequence of binary numbers to each interval between breakpoints (not breakpoint value), such that all adjacent intervals are numbered in ascending sequential order. The Examiner than refers applicant to Lakshman at Fig. 4, stating that Lakshman teaches this limitation, evidenced by the binary notation in sequential order from 0000 to 1111 related to each interval or breakpoint set.

Applicant is appreciative of the Examiner's narrowing of the scope for examination to the above-mentioned single issue at hand, and applicant agrees with the Examiner that this is where both the Examiner's, and applicant's focus must be centered. Applicant has once again, very carefully and thoroughly reviewed Lakshman, particularly the portions cited and applied in support of the Examiner's position that Lakshman anticipates applicant's invention. Fig. 4 of Lakshman, and the supporting description, absolutely does not teach that Lakshman assigns numbers to intervals, such that the numbering is related to each interval; rather, the teaching is clearly directed to numbering that is already existing, and is in fact the value on the axis for the breakpoints between intervals. Lakshman deals only with the binary value of the breakpoints on the axis and applicant strongly asserts that this is a clear distinction between the teachings of Lakshman and that of the claimed invention.

Examiner's response:

Para 3 above applies. ***The Examiner has full latitude to interpret each claim in the broadest reasonable sense.*** This means that the Examiner is under statutory obligation to interpret each claim of the applicant in the broadest reasonable manner.

From the specification at page 8, lines 11 and 18, the applicant admits that he is using Rene Descartes' Cartesian coordinate system.

It is from this perspective that the Examiner can emphatically state: Lakshman at Fig. 4 assigns a sequence of binary numbers to each interval between breakpoints such that all adjacent intervals are numbered in ascending sequential order as evidenced by the binary notation in the sequential order from 0000 to 1111 related to each interval or breakpoint set. ***In the broad perspective of the applicant's claim, Laksman assigns.***

In reference to Applicant's argument:

Lakshman does not assign sequential binary numbers to each interval between breakpoints, as the Examiner incorrectly asserts. The binary notations (0000-1111) referenced in Fig. 4 of Lakshman are the existing binary values at the breakpoints. Applicant asserts that the binary notations upon which the Examiner relies cannot possibly have been assigned, because they already exist. The fact that the existing binary values of breakpoints are in sequential binary order does not constitute that they are therefore assigned to intervals. Applicant argues that the notations are simply the pre-existing breakpoint values, they are not assigned. Lakshman, for that matter, does not assign anything that does not already exist. In order to assign binary numbers a value must be put on the interval. Lakshman does not assign anything different to the interval that is not pre-existing on the breakpoints.

The Examiner continues to misrepresent the teachings of Lakshman as reading on applicant's specific limitation of assigning sequential binary numbers to intervals. Applicant believes a telephone conference with the Examiner is now in order so as to finally come to a mutual understanding of the prior art teachings of Lakshman, and that of applicant's claimed invention. Applicant strongly asserts that Lakshman clearly and unarguably does not teach, suggest or intimate assigning sequential binary numbers to intervals, that existing binary notations of breakpoints have nothing whatsoever to do with binary values assigned to intervals, as taught in applicant's invention, and that Lakshman, therefore, still fails as a primary reference for a prima facie rejection of applicant's claims.

Examiner's response:

The above response applies. Further telephone interviews are subject to the policy of the MPEP.

In reference to Applicant's argument:

Applicant wishes to reiterate that applicant's invention teaches assigning sequential binary numbers to each interval between the breakpoints, and then using these assigned numbers (not breakpoint values) for the binary search. Applicant's assigned binary numbers are not breakpoint values, and do not bear any specific relationship to breakpoint values, and have nothing to do with values on the axes. Lakshman clearly and unarguably does not teach, suggest or intimate numbering intervals with binary numbers, and therefore cannot possibly locate the binary numbered interval into which the point projects on each axis by performing a search on each axis for the numbered interval into which the point projects on that axis.

Examiner's response:

The above response applies.

In reference to Applicant's argument:

Applicant has not amended any of the claims in this response, as it is applicant's very strong opinion that they are patentably distinct in their present form as amended in applicant's last Office Action response over the teachings of Lakshman. If required, however, applicant is willing to further narrow the language of the base claims to specifically recite and clarify that the assigned binary numbers are not, or are other than the breakpoint values on the axis. The assigned binary numbers of applicant's invention are distinctly different from the existing breakpoint values of Lakshman, in that they are a separate sequence of values that are related to the intervals, not the breakpoints, regardless, and independent of the breakpoint values. Applicant's assigned binary numbers have nothing whatsoever to do with the breakpoints values, and applicant respectfully points out to the Examiner that using the breakpoint values for searching the axes, as taught by Lakshman, does not provide the advantage of applicant's teaching of binary numbering (assigning), and associating the binary numbering to the intervals themselves. The clear and distinct advantage of applicant's teaching of assigning binary numbers to intervals and associating them with the intervals, is that there are only three bits in the binary sequential interval numbers (in the example presented), requiring fewer steps, and less hardware implementation for determining the best breakpoints when compared to conventional art.

Examiner's response:

Para 3 above applies. ***The Examiner has full latitude to interpret each claim in the broadest reasonable sense.*** This means that the Examiner is under statutory obligation to interpret each claim of the applicant in the broadest reasonable manner.

From the specification at page 8, lines 11 and 18, the applicant admits that he is using Rene Descartes' Cartesian coordinate system.

It is from this perspective that the Examiner can emphatically state: Lakshman at Fig. 4 assigns a sequence of binary numbers to each interval between breakpoints such

that all adjacent intervals are numbered in ascending sequential order as evidenced by the binary notation in the sequential order from 0000 to 1111 related to each interval or breakpoint set. ***In the broad perspective of the applicant's claim, Laksman assigns.***

The claims and only the claims form the metes and bounds of the invention.

The prior office actions responses apply.

Further telephone interviews and/or claim amendments are subject to the MPEP policies.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Claim 1 – 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Lakshman et al (ACM 1-58113-003, referred to as **Lakshman**).

Claim 1

Lakshman anticipates a first set of rules associating to the packets by values of the header fields (**Lakshman**, page 203, col 2, lines 29 – 35); and a classification system for selecting specific rules in the set of rules as applicable to a specific packet (**Lakshman**, page 203, col 2, lines 29 – 35); characterized in that the classification system projects the first set of rules as N-dimensional entities on N axes in N-

dimensional space, marking the beginning and ending value on each axis for each rule as a breakpoint, assigns a sequence of binary numbers to each interval between breakpoints such that all adjacent intervals in ascending sequential order, associates a subset of the first set of rules as applicable in each interval to the assigned binary number of the appropriate interval between breakpoints on each axis, then considers a packet as a point in the N-dimensional space according to its header field values, locates the binary number assigned to the interval into which the point projects on each axis by performing a search on each axis for the numbered interval into which the point projects on that axis, thereby determining rules applicable to the packet for that axis, and then determines the specific rules applicable to the packet from the subsets of rules by selecting those rules as applicable to the packet that apply to the packet on all of the N axes (**Lakshman**, page 208, col 2, lines 10 – 34; Fig. 4; Examiner's Note: a set of breakpoints constitutes an interval).

Claims 2, 13

Lakshman anticipates the search performed on each axis is a binary search conducted by selecting breakpoints at which the bits change for the binary numbered intervals (**Lakshman**, page 209, col 2, lines 59 – 62).

Claims 3, 14

Lakshman anticipates the search performed on each axis is a quaternary or higher-level M-ary search, where M is a power of 2, conducted by selecting breakpoints at which the bits change for the binary numbered intervals (**Lakshman**, page 209, col 2,

lines 59 – 62; Examiner's Note: quaternary is a looped binary search which has rule depth limits).

Claims 4, 15

Lakshman anticipates association of applicable rules in each numbered interval is made by associating a binary string with each interval, with one bit dedicated to each rule. (**Lakshman**, page 208, col 2, lines 10 – 34).

Claims 5, 16

Lakshman anticipates the rules are associated to bit positions in the binary string by priority, the order of priority according to bit significance, and a final rule is selected by the most significant 1 in the matching rules. (**Lakshman**, page 208, col 2, lines 10 – 34).

Claims 6, 17

Lakshman anticipates the applicable rules are found by ANDing the binary strings determined for each axis over all axes. (**Lakshman**, page 208, col 2, lines 10 – 34).

Claims 7, 18

Lakshman anticipates at least one hardware pipeline for conducting the search on an axis, the pipeline comprising first, second, and sequential modules for accomplishing increasingly particular portions of the search, wherein, after the first module of the sequential modules is used, determined values from the first module pass to the second module, and values for a second packet enter the pipeline at the first

module, the pipeline operations proceeding thus sequentially. (**Lakshman**, page 208, col 2, lines 36 – 39; page 209, col 1, lines 1 – 26).

Claims 8, 19

Lakshman anticipates parallel pipelines with one pipeline dedicated to searching on each axis in the N-dimensional space, wherein searches are conducted for applicable intervals simultaneously on each axis. (**Lakshman**, page 208, col 2, lines 36 – 39; page 209; col 1, lines 1 – 26).

Claims 9, 20

Lakshman anticipates applicable rules for each interval on each axis are represented by individual bitmaps, with each rule assigned a bit position, and wherein the outputs of the parallel pipelines, being the numbered interval on each axis into which the point for a packet projects, are exchanged for the associated bitmaps, which are then ANDed to determine the applicable rules. (**Lakshman**, page 208, col 2, lines 36 – 39; page 209; col 1, lines 1 – 26; page 208, col 2, lines 10 – 34).

Claims 10, 21

Lakshman anticipates searching is interleaved, results of searching on one or more axes being applied to other axes before searching on the other axes. (**Lakshman**, page 207, col 2, lines 55 – 57; Examiner's Note: Lakshman, using the best method related to the development of the system of Claim 1, extracts the jth element of every filter for all n filter rules where such element's reference must exceed one on the jth axis. In the conventional mathematical notation, if i is less than 1 or not defined, the respective jth axis has no value for the referenced rule. Since there must be an ith

value for each rule in the jth dimension, Lakshman's algorithm anticipates an efficient search. The mathematical converse applicable to Lakshman's notation sets aside the rule covering the instance wherein the rule does not have an interval on one or more k axes.)

Claims 11, 22

Lakshman anticipates rules that are found by search to not apply on one or more axes are not considered in searches conducted on the other axes (**Lakshman**, page 207, col 2, lines 55 – 57; see above notation).

Claim 12

Lakshman anticipates projecting the rules as N-dimensional entities on N axes in dimensional space (**Lakshman**, page 207, col 2, lines 55 – 60); marking the beginning and ending value on each axis for each rule as a breakpoint (**Lakshman**, page 208, col 1, lines 7 – 10); assigning a sequence of binary numbers to intervals between breakpoints on each axis such that all adjacent intervals are numbered sequentially in ascending order; identifying those breakpoints at which bits in the interval numbers change (**Lakshman**, page 208, col 2, lines 10 – 34; Figure 4); associating a subset of the rules as applicable to the assigned number of each interval on each axis (**Lakshman**, page 208, col 2, lines 10 – 34); considering a packet as a point in the N-dimensional space according to values of the header fields for the packet (**Lakshman**, page 203, col 2, lines 29 – 35); determining by search the binary number of the interval on each axis into which the packet point projects (**Lakshman**, page 203, col 2, lines 29 – 35; page 208, col 2, lines 10 – 34); substituting the subset of rules that apply for each

determined interval (**Lakshman**, page 208, col 2, lines 10 – 34); and selecting those rules as applicable to the packet that associate to the packet on all of the N axes (**Lakshman**, page 208, col 2, lines 10 – 34).

Claim 23

Lakshman anticipates conducting a first search on one or more axes (**Lakshman**, page 209, col 2, lines 56 – 62); and using information from the first search to simplify further searching on remaining axes (**Lakshman**, page 203, col 2, lines 19 – 25).

Conclusion

8. This is a continuation of applicant's earlier Application No. 09/586,115. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Claims 1-23 are rejected.

Correspondence Information

Any inquiry concerning this information or related to the subject disclosure should be directed to the Examiner, Joseph P. Hirl, whose telephone number is (703) 305-1668. The Examiner can be reached on Monday – Thursday from 6:00 a.m. to 4:30 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Anil Khatri can be reached at (703) 305-0282.

Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,

Washington, D. C. 20231;

or faxed to:

(703) 746-7239 (for formal communications intended for entry);

or faxed to:

(703) 746-7290 (for informal or draft communications with notation of

"Proposed" or "Draft" for the desk of the Examiner).

Hand-delivered responses should be brought to:

Receptionist, Crystal Park II

2121 Crystal Drive,

Arlington, Virginia.

Joseph P. Hirl

March 16, 2004

Wilbert L. Starks, Jr.
Primary Examiner
Art Unit - 2121